Influence of Music in Decision-Making

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Music is a universal language; it can connect us with people who look different, speak a different language, or live in a distant location. Music evokes our senses and has the ability to affect one's behavior both consciously and subconsciously. As a guitar player myself, I have always found that playing music calms me down and can awaken or heighten different feelings that I don't feel when sitting in silence. This semester, I wanted to research how the effects of music on our subconscious can be utilized to one's advantage economically or in a business setting. To guide my research, I had the incredible opportunity to intern with Duke professor Gavan Fitzsimons who works at Duke's Fuqua School of Business and specializes in business psychology, a field which is now known as *Behavioral Economics*. The study of behavioral economics is incredibly groundbreaking and interesting because it bridges economics with psychology and statistics and studies humans' *irrational* decision-making which is oftentimes overlooked in regular economics classes. Behavioral economists, like Dr. Fitzsimons, search to find relationships between diverse variables and their effect on the habits of consumers through experiments and correlational studies. At Duke, I had the opportunity to attend weekly meetings with Dr. Fitzsimons and his Ph.D. students and learn how to outline a real experiment, collect data, and analyze that data into information that companies can use to benefit themselves. My project's goal was to uncover the different ways that music can prompt consumers to behave in specific ways, like buying a product, spending more time in a store, or spending more money, and share my findings with the public to make my community more informed consumers.

The first step of my project was to test whether or not music had an effect on decision making at all. To initiate my research I read *Nudge* by Richard Thaler, who, alongside Kahneman and Tversky, is oftentimes considered the father of Behavioral Economics. In his book, Thaler shares the way that a nudge, which is when a one tries to "influence people's behavior without

requiring anybody to do it"[1] can be utilized by businesses (Thaler). To test whether or not music could be used to nudge consumers, I outlined an experiment in our student store. The experiment sought to test the effect that different types of music had on total sales at the Durham Academy school store. In an effort to try and eliminate as many confounding variables as possible I made sure to conduct my experiments for the same duration of time on three separate days (during tutorial) and made sure that each day there was a food truck set to come during lunch because, as the store's data showed, the store's sales are greatly skewed on days without a food truck compared to those with a food truck. The first day, I set up a speaker in the store and played a Spotify playlist that was headlined as "studying music." The songs had no words and were very relaxing. The second day, I played more upbeat, popular music from a Spotify playlist titled "most popular hits from the 2010's", and the final day was my control day where I played no music at all to see what my results looked like on a regular school day. The results came back as follows: on the first day, where relaxing music was played, the store made $312 in total sales. The second day, which played upbeat/popular music, the store made $275 in total, and the last day, which had no music, the store made $236 in total. While this data is a small sample size, it does show that music does have an effect in increasing sales. To further test these findings, however, I repeated a similar study over a longer period of time. In this second study I had four experimental days where I played only popular songs' instrumental versions and four control days where I played no music. For this experiment, music was played throughout the entire day. Here are the results:

[1] Thaler, R. (2021, July 27). *Nudge Vs Shove: A Conversation With Richard Thaler* [Interview audio recording]. https://www.npr.org/transcripts/1021438772

Day of the Week	No Music (Week of 3/22-3/25)	Music (Week of 3/29-4/1)	Percent change
Tuesday	$1390	$1287	-7.4%
Wednesday	$1129	$1225	+7.8%
Thursday	$1474	$1439	-2.4%
Friday	$1023	$1386	+26.2%

While the data from this experiment may not be as alarming, it still suggests that music does have an underlying effect in the way we make decisions. My personal experiments were also backed up by research done at large retail chains like Target and Walmart. According to a study by Ronald E. Milliman, supermarkets report an increase in "sales volume by 38%"[2] when relaxing music was being played compared to when it was not (Milliman). This baseline finding, that music does have the ability to nudge consumers and result in higher volume of sales, opened my research to limitless possibilities where I could investigate the ways in which certain types of music could affect specific, desired behaviors and analyze the significance of these actions. While there are a lot of different marketing strategies involving music that can affect a consumer's behaviors, there were four that stuck out as especially effective. Should a consumer want to make more rational decisions, they should be made aware of these strategies.

Studies done at Duke have found that tempo greatly affects human's perception of time and this information can be utilized by stores to subconsciously encourage their customers to stay in their store longer and hopefully purchase more. Slower music often makes people feel like time is moving much slower whereas fast-paced music makes individuals feel like time is sped up. Stores often use this information and play slow-paced background music in the hopes that customers will spend more time in the store without realizing it. This is an experiment that I wanted to repeat. My experiment went as follows: I had eight randomly selected individuals

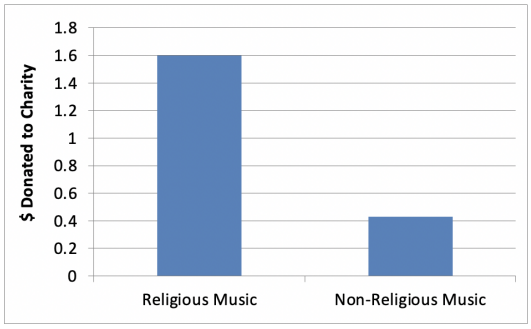
[2] Devaney, E. (2016, January 7). Stores Are Using Music To Make You Spend More. *ThinkGrowth.org*. https://thinkgrowth.org/stores-are-using-music-to-make-you-spend-more-d6c85974b20b

listen to the song *Rap God* by Eminem, which is a very fast-tempoed song. While listening to the music I asked the participants to tell me when they felt one minute had passed without looking at a clock or counting. I then repeated the same procedure with the same subjects but for the song *Analogue Dreams* by Retrosoft, which is a very slow-paced song without words. Of the eight participants, the average time that the participants thought a minute had passed while listening to *Rap God* was only 49 seconds. The average time that the participants thought a minute had passed while listening to *Analogue Dreams*, however, was 87 seconds. This data supports a long held understanding that music can affect our perception of time, which can lead customers to spend more or less time in a certain place without realizing it. Research has been done by Maureen Morrin, a marketing professor at Rutgers University, and the American Psychological Association (APA) which determined that customers are more likely to make impulse decisions after remaining in a store for an extended period of time. Morrin also discovered that shoppers who "had made an unplanned purchase spent, on average, $32.89 more when (slow tempo) music was playing"[3] than impulse shoppers who were not exposed to music (APA). This finding is significant because it shows that slow-paced music not only affects perception of time, but also affects how much consumers will spend. Morrin further investigated how the tempo of music, when paired with a different sense, like smell, can further enhance customers' willingness to purchase more. This demonstrates *sensory interaction*, which is an important term to know. As research has shown, stores will often play slow-paced music to trick the mind into thinking that time is moving slower; sometimes, however, stores will also artificially pair this music with an increase in the scent of a product to make it seem even more appealing. In the presence of both slow music and heightened scent, customers are more likely to buy the product. As a consumer,

[3] Dingfelder, S. (2005, November). Music motivates impulse buyers, not thoughtful shoppers. *American Psychological Association*. Retrieved May 16, 2022, from https://www.apa.org/monitor/nov05/music

it is important to try and recognize how music can influence one's perception of time; in doing so, one will make less impulsive decisions, spend less money, and be in more complete control of their actions.

Another component of music that can affect one's subconscious decision-making is wording effects (Sapir-Whorf Hypothesis) as well as the genre of music. Psychology has shown us that the wording of a product can greatly increase one's desire to buy it or not. For example, a packaging label is more appealing to customers if it says "75% fat-free" rather than "25% fat." In a similar sense, lottery's are more appealing if they inform a consumer that they have a 1/100,000 chance to win rather than a 99,999/100,000 chance of losing. I was interested in how this phenomenon relates to music, more specifically, if the lyrics of a song have much to do with how consumers behave. Fortunately, Dr. Fitzsimons and Dr. Cavanaugh, a Marketing and Behavioral Science professor at the UBC Sauder School of Business, had conducted research on a similar question. Their study took place during Christmas and questioned whether religious Christmas music (which referenced religion) would change the way consumers behaved compared with secular Christmas music (without mention of religion). One hypothesis of theirs was that buyers who were exposed to religious Christmas music would give larger donations to charity compared to consumers who were exposed to secular Christmas music. Here are their results:[4]



[4] Lisa A. Cavanaugh and Gavan J. Fitzsimons (2009) ,"Happy Holidays? How Sights and Sounds of the Holidays Cue Different Feelings & Consumption Behaviors", in NA - Advances in Consumer Research Volume 36, eds. Ann L. McGill and Sharon Shavitt, Duluth, MN : Association for Consumer Research, Pages: 168-171.

As is demonstrated in their findings, on average, religious music caused consumers to donate much more to charity than did non-religious music. This demonstrates the significance of word choice and lyrics in songs, and their power to influence one's behavior.

Similarly to the words in a song, the genre of music can also greatly influence one's decision-making. A study by Adrian North and Lorraine Sheridan of Curtin University and Charles Areni of Macquarie University hypothesized that nationalistic music would influence what consumers bought in a restaurant. In their experiment, 120 Scottish college students were randomly assigned to one of four rooms. Each room had a different nationality of music playing—"American (The Beach Boys), Chinese (The Peking Brothers), Indian (Sunidhi Chauhan)—on a continuous loop. The fourth room had no music"[5] (North and Sheridan). After listening to the music, the participants were asked to pick an item off of the menu. Their results showed that almost all of the participants ordered a dish that originated from the same place as the music they were listening to, which shows the influence that music's genre can have on our decision making. A final question that I had throughout my research regarding music genres was whether or not different genres could affect how much a consumer would be willing to pay for a product. I hypothesized that consumers who saw a product while listening to luxurious music would be willing to pay more for that product than consumers who saw the same product while listening to non-luxurious music. I made this hypothesis because luxurious music is often paired/fitted to luxurious settings and high-end goods whereas non-luxurious music is often paired with non-luxurious settings and less valuable goods. For example, the music being played in a fancy hotel is far different from the music being played in a gas station or gym. To test my

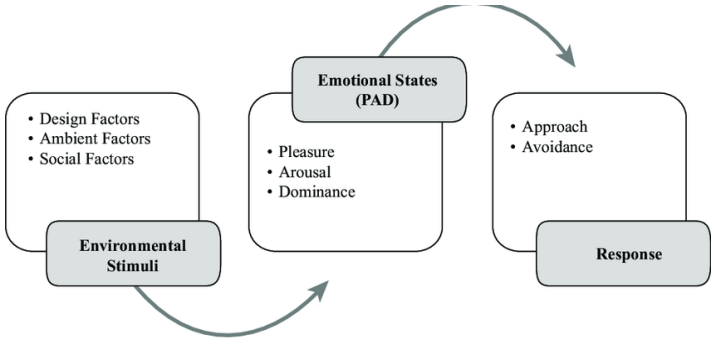
[5] Background Music Influences Buying Behavior. (2015, September 10). *Association for Psychological Science*. https://www.psychologicalscience.org/news/minds-business/background-music-influences-buyer-behavior.html

hypothesis I recreated a similar experiment to one that was conducted by Adrian North and Lorraine Sheridan. In my experiment I selected 15 volunteers from school. The participants were then randomly assigned to three groups of five. In each group, all of the participants were shown the same picture of a high end J-Crew t-shirt worth $28, and were given $50 mock dollars to spend. Each participant was then asked how much they would realistically be willing to pay for the t-shirt. The independent variable was that each group of five had a different genre of music playing in the background. This is the image of the t-shirt that the participants were shown:

The first room was exposed to classical music, which often accompanies luxurious settings, while making their purchase decision. The second group was exposed to workout music, which is oftentimes heard in non-luxurious settings, while making their decision. Finally, the last group was the control group which made their decision in a room with no music. The first group, which was exposed to classical (luxurious) music, offered to pay the most of any group with an average offer of $37.50. The second group, which was exposed to workout music, offered to pay the least of any group with an average offer of $21.66. The last group, which made their decision in silence, were, on average, willing to pay $30 for the shirt, which is closest to the actual retail

price. The findings of this experiment are significant. Though the sample size is not very large, the findings suggest that the genre of music, as it relates to perceived luxury, has a profound effect on how much an individual is willing to pay for a product. This research proves the effects that different genres of music have on decision-making. The lyrics and genre of songs both have the ability to alter what one buys as well as how much one is willing to pay for a product without conscious awareness of their biases. Though every song has a different effect on every individual, similar trends appear across all populations. For this reason it is important for all consumers to be made aware of the sensory, and especially auditory, marketing strategies that are used by businesses world wide.

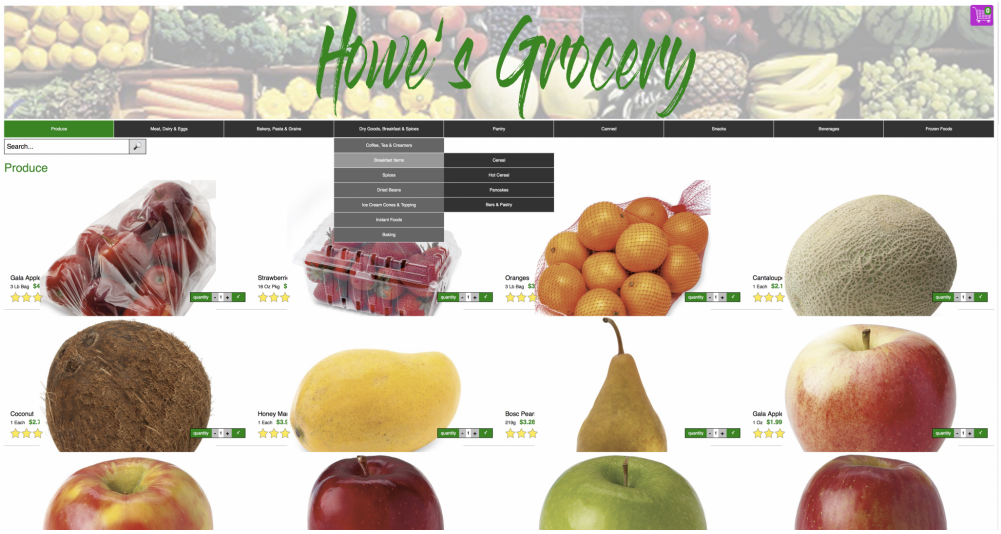
As stated earlier, music can have a profound effect on one's mood which can greatly influence their behavior. The "Pleasure, Arousal, Dominance" (PAD) Model, proposed by Albert Mehrabian and James Russel, outlines how one's perception of their environment will either elicit a positive or negative response which can greatly influence their response to a stimulus. Though the model represents a very simple idea, it is crucial to understanding how one's perception of their environment can affect their mood and thus affect their decisions. This is an image of the model:



IDealogic, a company that specializes in the science behind "company branding" writes, "[i]f the music (in a store) evokes a positive response (pleasure), stimulates the shopper (arousal), and

makes them want to explore (dominance), the consumer will spend more time browsing, which can lead to higher sales. However, if the music has the opposite effect, it can push shoppers away; and in some cases, music can make them leave the store"[6] (IDealogic).

I wanted to test the extent to which this model holds up in real life, so I conducted an experiment of my own. In my experiment I utilized a mock online store that was created by Duke Ph.D. student, Holly Howe. In the mock store, called *Howe's Grocery*[7], consumers can choose from over 2,000 grocery items and add any products they'd like to their cart without spending any real money. Here is an image of the mock store:



As the experimenter, I had the ability to alter the price, labeling, nutritional facts, time in store, products available, and many other variables, which helped me remove many confounding variables and make the shopping experience the same for all of the case studies. In my experiment I had six volunteers which I split up into two groups of three. In the first group, I

[6] *THE PSYCHOLOGY OF MUSIC AND ITS INFLUENCE ON CONSUMER BEHAVIOR*. (n.d.). IDealogic (Brand Lab). Retrieved May 16, 2022, from https://idealogicbrandlab.com/the-psychology-of-music-consumer-behavior/#:~:text=Studies%20discovered%20that%20when%20noisy,a%20distressed%20response%20in%20shoppers.

[7] Howe, H. (n.d.). *Howe's Grocery* [Computer program]. https://openscience-onlinegrocery.com/store/home

asked every member to play a type of music that made them feel happy. In the second group, I asked members to listen to a type of music that they didn't like or music that made them feel sad. After making each participant listen to their selected music for a couple minutes, which I hypothesized would heighten the music's effect on their mood, I gave them access to Howe's Grocery Store. Each participant was then asked to go shopping in the store while still listening to their music. In the store, the participants were instructed to go shopping as if they were buying dinner for a family of four, they could spend anywhere between $0 and $100 in the store, and could spend as much or as little time in the store as they desired. As hypothesized, those who were allowed to listen to music that made them feel good spent much more time and money in the store than those who did not. On average, the people who listened to music that made them feel good spent $80.13 and spent an average of 15 minutes in the store compared to those who were asked to listen to music that made them feel bad who only spent an average of $58.55 in the store and spent an average of eight minutes shopping. These results can be attributed to the Mehrabian-Russell Model: the consumers who were placed in an environment that elicited a positive response, due to listening to music they liked, were more likely to spend more time and money in the store than those who were placed in an irritable environment. Although stores do not cater their background music to an individual's choosing, like in my experiment, it is still important to recognize that different types of music can have a profound effect on an individual's mood and that these feelings can affect one's behavior. These results are not to suggest that one should always be in a bad mood when shopping, but merely demonstrates how different moods can change the way one behaves and consumes. When shopping it is important for consumers to be made aware of their unconscious biases and the ways that music can affect their moods if they desire to make more rational decisions.

Though, to a certain extent, everyone is an irrational consumer, it is important to recognize the ways that companies use different marketing strategies and techniques to subconsciously affect the ways humans behave and make decisions. After reflecting on the profound ways that music has affected my life and the way I view the world, I was curious to research and experiment on the ways that businesses can utilize the universality of music to influence the behavior of their consumers. The tempo, lyrics, genre, and mood of a song all contribute to the amount consumers purchase, how much they are willing to purchase, what they purchase, and how long they stay in a store. It is important to note however, that music is not the only universal language that companies use to influence behavior. As is demonstrated in countless studies, what one sees, tastes, smells, and touches can also greatly affect one's behavior. In fact, due to sensory interaction, oftentimes the most effective marketing techniques utilize a whole host of different senses to influence consumer behavior. This is the beauty and danger of sensory marketing; though incredibly effective, it can oftentimes cause consumers to make irrational decisions. Nevertheless, being aware of the different ways our brains can be subconsciously influenced is the first step to combating them and making more informed, rational decisions.[8]

[8] For more information please visit my website: https://glevinson.sites.da.org/

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